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APPLICATION NUMBER	FILING DATE	FIRST NAMED APPLICANT	ATTORNEY DOCKET NO.
08/822,963	03/21/97	LIU	ENZ-56

D
EXAMINER

HM11/0605

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ART UNIT	PAPER NUMBER
1636	8

DATE MAILED: 06/05/98

This is a communication from the examiner in charge of your application.
COMMISSIONER OF PATENTS AND TRADEMARKS

OFFICE ACTION SUMMARY

☑ Responsive to communication(s) filed on 1/2/98 and 4/17/98

☐ This action is **FINAL**.

☐ Since this application is in condition for allowance except for formal matters, **prosecution as to the merits is closed** in accordance with the practice under *Ex parte Quayle*, 1935 D.C. 11; 453 O.G. 213.

A shortened statutory period for response to this action is set to expire Three (3) month(s), ~~or thirty days,~~ whichever is longer, from the mailing date of this communication. Failure to respond within the period for response will cause the application to become abandoned. (35 U.S.C. § 133). Extensions of time may be obtained under the provisions of 37 CFR 1.136(a).

Disposition of Claims

☑ Claim(s) 1-67 is/are pending in the application.

Of the above, claim(s) 17-60 and 67 is/are withdrawn from consideration.

☐ Claim(s) _____ is/are allowed.

☑ Claim(s) 1-16 and 61-66 is/are rejected.

☐ Claim(s) _____ is/are objected to.

☐ Claims _____ are subject to restriction or election requirement.

Application Papers

☐ See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.

☐ The drawing(s) filed on _____ is/are objected to by the Examiner.

☐ The proposed drawing correction, filed on _____ is ☐ approved ☐ disapproved.

☐ The specification is objected to by the Examiner.

☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).

☐ All ☐ Some* ☐ None of the CERTIFIED copies of the priority documents have been

☐ received.

☐ received in Application No. (Series Code/Serial Number) _____.

☐ received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

*Certified copies not received: _____.

☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

☑ Notice of Reference Cited, PTO-892

☐ Information Disclosure Statement(s), PTO-1449, Paper No(s). _____

☐ Interview Summary, PTO-413

☐ Notice of Draftsperson's Patent Drawing Review, PTO-948

☐ Notice of Informal Patent Application, PTO-152

☑ Notice to Comply with the Sequence Rules

– SEE OFFICE ACTION ON THE FOLLOWING PAGES –

★ U.S. GPO: 1998-410-238/40050

The petition to correct the inventorship of this nonprovisional application under 37 CFR 1.48(a) is deficient because:

No Petition under 37 CFR 1.48(a) has been filed, the only petition filed in the instant application is under 37 CFR 1.48(b). There is also no written consent of any assignee.

The petition requesting the deletion of an inventor in this nonprovisional application under 37 CFR 1.48(b) is deficient because:

No inventor is indicated as being deleted in the instant submission under 37 CFR 1.48(b) and the petition lacks a statement required under 37 CFR 1.48(b)(1).

This application contains sequence disclosures that are encompassed by the definitions for nucleotide and/or amino acid sequences set forth in 37 CFR 1.821(a)(1) and (a)(2). A computer readable form (CRF) of the sequence listing was submitted. However, the CRF could not be processed by the Scientific and Technical Information Center (STIC) for the reason(s) set forth on the attached Raw Sequence Listing Error Report.

Applicant must comply with the sequence rules, 37 CFR 1.821 - 1.825 and submit a new complete Sequence Listing. Direct the reply to the undersigned. Applicant is requested to return a copy of the attached Notice to Comply and the attached Raw Sequence Listing Error Report with the reply.

1. Applicant's election with traverse of Group I (Claims 1-16 and 61-66) in Paper No. 4 is

acknowledged. The traversal is on the ground(s) that a search of the different groups would be co-extensive (at least in part), would serve to duplicate the search efforts of other examiners and would burden the applicants by requiring the filings of divisional applications. This is not found persuasive because a search of the art for the different inventions would be burdensome. For example, each group involves a search of a different type of viral vector or packaging host cell. A search of Group I would involve a search of the viral vector art and promoter art while a search of Group II would involve a search of the art with regard to the generation and use of pseudotyped viral vectors, the viral envelope art, etc. while a search of Group III would involve a search of the viral vector art with regard to vectors which integrate into the genome of target cells, etc.

The requirement is still deemed proper and is therefore made FINAL.

2. Claims 17-60 and 67 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to non-elected inventions, the requirement having been traversed in Paper No. 4.

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless --
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1-4, 6-11, 15-16, 61-64 are rejected under 35 U.S.C. 102(b) as being anticipated by Smith or Dougherty et al.

Applicants claim viral vectors (i.e. a retrovirus vector) capable of expressing a foreign nucleic acid sequence, said vectors comprising a modified native promoter/enhancer, a non-native promoter's gene or gene segment, a native or non-native viral vector terminator, two or more modified segments and a process for producing said vectors comprising introducing the vectors into a packaging cell.

Smith (Annu. Rev. Microbiol., 1995, Vol. 49, pp. 807-838, see whole article, particularly pp. 810-815 and 817-820) and Dougherty et al. (PNAS, 1987, Vol. 84, pp. 1197-1201, see whole article, particularly Figs. 1-3 and pp. 1198-1199) recite viral vectors (i.e. retroviral or adenoviral vectors) capable of expressing a foreign nucleic acid sequence of interest, said vectors comprising a modified native promoter/enhancer sequence, a non-native promoter's gene or gene segment, a native or non-native viral vector terminator, two or more modified segments, one or more non-native promoters capable of producing an RNA lacking a polyA signal, a process for producing the vectors comprising introducing the vectors into a suitable packaging cell line. Smith and Dougherty et al. therefore anticipate the claimed invention.

5. Claim 5 is rejected under 35 U.S.C. 102(b) as being anticipated by Smith (cited above, see whole article, particularly pages 817-819).

Applicants claim viral vectors comprising substitution of a native promoter/enhancer with a non-native segment wherein the substituted segment is approximately the same size as the native segment.

Smith recites retroviral vectors containing LTRs from different retroviruses substituted for the native LTR. Since the LTRs from different retroviruses are approximately the same size, it must be assumed that Smith teaches the claimed invention.

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103© and potential 35 U.S.C. 102(f) or (g) prior art under 35 U.S.C. 103(a).

7. Claims 12 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Smith in view of Thompson et al.

Applicants recite viral vectors comprising an snRNA promoter (i.e. the U6 snRNA promoter).

Smith is recited as in the above 35 USC 102(b) rejection of claims 1-4, 6-11, 15-16 and 61-64.

Thompson et al. (U.S. Patent #5,750,390, issued 5/12/98, priority back to 8/26/92, see whole document, particularly column 8) recites the well known use of the strong human U6 snRNA promoter in the context of expression vectors.

The ordinary skilled artisan, seeking to choose a promoter for inclusion in an expression vector of the type recited by applicants and Smith, would have been motivated to use the U6 snRNA promoter (as recited by Thompson et al.) because said promoter is a well characterized strong promoter which has been used in prior art expression vectors. It would have been obvious for the ordinary skilled artisan to do this because Thompson et al. Indicates that the human U6 snRNA promoter is a strong, versatile, promoter for use in expression vectors. Given the teachings of the cited prior art, it must be considered that the ordinary skilled artisan would have had a reasonable expectation of success in practicing the claimed invention.

8. Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Smith in view of Greatbatch et al.

Applicants recite viral vectors comprising a tRNA promoter and the gene or gene segment associated with said promoter.

Smith is applied as in the above 35 USC 102(b) rejection.

Greatbatch et al. (U.S. Patent #5,324,390, issued 6/28/94, see whole document, particularly columns 16-17) teaches the use of a tRNA promoter in the context of a recombinant viral expression vector and teaches that the tRNA gene sequence can be maintained and transcribed and should not interfere with the activity of the heterologous nucleic acid to be expressed by the vector.

The ordinary skilled artisan, seeking to choose a promoter for inclusion in an expression of the type disclosed by Smith or applicants would have been motivated to use the tRNA promoter (and optionally the tRNA gene or segment thereof) because Greatbatch et al. indicates that the tRNA promoter is desirable because of economy and size and because polIII promoters such as the tRNA promoters are more or less universal in expression. It would have been obvious for the skilled artisan to do this because of the well known properties of tRNA promoters (small size, universal expression, etc.) and their use in expression vectors of viral or non-viral character. Given the teachings of the cited prior art, it must be considered that the ordinary skilled artisan would have had a reasonable expectation of success in practicing the claimed invention.

9. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

10. Claims 1-16 and 61-66 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 1, 11 and 64 (and dependent claims) are vague in the recitation of the phrases "...said vector being capable of expressing..." or "...promoters are capable of..." or "...construct is capable of stable integration..." because the capacity of a compound or composition to perform some function is merely a statement of a latent characteristic of said compound or composition and said language carries no patentable weight.

Claims 1-16 and 61-66 are vague in the use of terms "native" and "non-native" with regard to promoters or viral vectors or segments because it is unclear as to the context for these terms. For example, viral vectors generally comprise different sequences from various sources, i.e. a vector backbone, a heterologous viral or cellular promoter, a polyA sequence from a different virus, a splice donor site from another different source, etc. The use of the terms "native" and "non-native" in this context carries no meaning since each element of a viral vector could be considered "native" to the vector and every other element could be considered "non-native".

Claims 6, 12 and 14 are vague in that they recite improper Markush language. The members of a Markush group are separated by "and" not "or".

Claims 62 and 63 are vague in that the phrase "wherein said providing step or introducing step" appears unconnected to the following language in the claim.